

## UDL Lesson Plan - Patricia Startz

### Lesson Overview

Title:	Exemplar Lesson Weather Here and There
Author:	Patricia Startz utilizing CAST, CScope, and TAMU PEER Resources
Subject:	Science
Grade Level(s):	Three
Duration:	<b>1 day initial lesson, ongoing data collection through the week of March 24th</b>
Subject Area:	Collecting, Calculating and Analyzing Weather Data
Unit Description:	<p><i>This unit bundles TEKS related day-to-day weather changes and the use of tools and current technology to collect, construct, organize, examine, and evaluate measured data.</i></p> <p><i>In this unit, students will build on prior knowledge of skills and concepts including a) measureable properties of matter, b) changes in state caused by heating and cooling, and c) processes related to evaporation and condensation. As the year progresses, students will expand their understanding of weather as they explore Earth-related cycles/systems and study changes that impact the environment.</i></p> <p><i>Technology is essential to science, because it provides instruments and techniques that enable observations of objects and phenomena that are otherwise unobservable due to factors such as quantity, distance, location, size, and speed. Technology also provides tools for investigations, inquiry, and analysis". (national Academy of Science, National Science Education Standards)</i></p> <p><i>"Perhaps the most direct way in which people benefit from earth science research is through daily weather prediction" (NASA Career Expo). In this unit, students will have the opportunity to use simple meteorologist tools and technology to observe, collect, and compare local weather conditions with those in other geographical locations. By keeping daily records, students will observe the variability of weather, begin to notice patterns of change, and draw simple inferences about the interactions among land, air, water, and the Sun.</i></p> <p><i>National Academy of Science (1996) National Science education standards. Retrieved November 28, 2009, from <a href="http://www.nap.edu/openbook.php?record_id=4962&amp;page=166">http://www.nap.edu/openbook.php?record_id=4962&amp;page=166</a></i></p> <p><i>National Aeronautics and Space Administration Career Expo (2003). Retrieved November 24, 2009, from <a href="http://kids.earth.nasa.gov/archive/career/meteorologist.html">http://kids.earth.nasa.gov/archive/career/meteorologist.html</a></i></p> <p><i>TESCCC, 2011, CScope Curriculum alignment materials retrieved 3/12/2012 by Kim Davis from :</i></p>

Lesson Description for Day:	Investigating Weather here and there
State Standards-	<p>3.1 Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following school and home safety procedures and environmentally appropriate practices. The student is expected to</p> <p>3.1A Demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including observing a schoolyard habitat.</p> <p>3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations. The student is expected to:</p> <p>3.2A Plan and implement descriptive investigations, including asking and answering questions, making inferences, and selecting and using equipment or technology needed, to solve a specific problem in the natural world.</p> <p>3.2B Collect data by observing and measuring using the metric system and recognize differences between observed and measured data.</p> <p>3.2C Construct graphic organizers, simple tables, charts, and bar graphs using tools and current technology to organize, examine, and evaluate measured data.</p> <p>3.2D Analyze and interpret patterns in data to construct reasonable explanations based on evidence from investigations.</p> <p>3.2E Demonstrate that repeated investigations may increase the reliability of results.</p> <p>3.2F Communicate valid conclusions supported by data in writing, by drawing pictures, and through verbal discussion.</p> <p>3.3 Scientific investigation and reasoning. The student knows that information, critical thinking, scientific problem solving, and the contributions of scientists are used in making decisions. The student is expected to:</p> <p>3.3D Connect grade-level appropriate science concepts with the history of science, science careers.</p> <p>3.4 Scientific investigation and reasoning. The student knows how to use a variety of tools and methods to conduct science inquiry. The student is expected to:</p> <p>3.4A Collect, record, and analyze information using tools, computers, Celsius thermometers, wind vanes, rain gauges, compasses, notebooks, timing devices, including clocks and stopwatches.</p> <p>3.5 Matter and Energy. Student knows that matter has measureable physical properties and those properties determine how matter is classified, changed, and used. The student is expected to:</p> <p>3.5A Measure, test, and record physical properties of matter, including temperature.</p>

	<p>3.8 Earth and Science. The student knows there are recognizable patterns in the natural world and among objects in the sky. The student is expected to:</p> <p>3.8A Observe, measure, record, and compare day-to-day weather changes in different locations at the same time that include air temperature, wind direction and precipitation.</p>
NETS-s	<p>1. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.</p> <ul style="list-style-type: none"> <li>a. Apply existing knowledge to generate new ideas, products or processes;</li> <li>b. Create original works as a means of personal or group expression</li> <li>c. Use models and simulations to explore complex systems and issues</li> <li>d. Identify trends and forecast possibilities</li> </ul> <p>2. Communication and Collaboration Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.</p> <ul style="list-style-type: none"> <li>a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media</li> <li>b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats</li> <li>c. Develop cultural understanding and global awareness by engaging with learners of other cultures</li> <li>d. Contribute to project teams to produce original works or solve problems</li> </ul> <p>3. Research and Information Fluency Students apply digital tools to gather, evaluate, and use information.</p> <ul style="list-style-type: none"> <li>a. Plan strategies to guide inquiry</li> <li>b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media</li> <li>c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks</li> <li>d. Process data and report results</li> </ul> <p>4. Critical Thinking, Problem Solving, and Decision Making Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.</p> <ul style="list-style-type: none"> <li>a. Identify and define authentic problems and significant questions for investigation</li> <li>b. Plan and manage activities to develop a solution or complete a project</li> <li>c. Collect and analyze data to identify solutions and/or make informed decisions</li> <li>d. Use multiple processes and diverse perspectives to explore alternative solutions</li> </ul> <p>Net-s retrieved from : <a href="http://www.iste.org/standards/nets-for-students.aspx">http://www.iste.org/standards/nets-for-students.aspx</a> 3/15/2012</p>

### Goals:

Unit Goals:	<p>Students will be able to describe and measure weather conditions at a particular time and place.</p> <p>Students will be able to measure and compare weather conditions in different locations.</p> <p>Students will be able to utilize weather data patterns to make analyze and evaluate</p>
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	data Students will be able to utilize weather data patterns to draw conclusions, make predictions, and determine whether or not data supports Global Warming theory.
Lesson Goals:	Students will observe, measure, record, and compare weather data using meteorologists tools and computers: Day-to-Day weather changes in different locations at the same time including, but not limited to: -Air temperature, -Wind direction, -Precipitation

### Methods:

Anticipatory Set:	In this lesson, students review the components of weather and the tools or instruments used to collect weather data. A system for collecting and reporting weather data in different locations is established. This is an ongoing project that allows students to collect and compare weather data throughout the seasons of the school year.
Introduce and Model New Knowledge:	Students will re-read the story, "Tut's Revenge" in the eBook format answering the interactive assessment questions as they go while recording the questions and answers for inclusion in the class Science Blog.
Provide Guided Practice:	A powerpoint/slideshow presentation has been included to provide students with the pertinent weather and climate data in Luxor, Egypt in 2006. The teacher will show students how to create an online data table and how to record and average this data, if needed. The target audience is GT students, they may not need this additional help.
Provide Independent Practice:	Students will post their answers to the questions posed in the rereading on the classroom Science Blog. They will use appropriate internet netiquette to comment on their classmates contributions. Students will utilize internet and newspaper resources to research the weather and climate data for their home town in 2006. Using these same resources, they will collect a five day forecast each Wednesday for each of Falls City, and Luxor, Egypt;calculate and record the average temperature and precipitation until the 4th week of March. At the end of the 4th week of March, students will begin their final evaluation of their collected data and create expository reports of their findings.

### Assessment:

Formative/Ongoing Assessment:	<ol style="list-style-type: none"> <li>1) Did students create the online Weather data table?</li> <li>2) Did they correctly analyze/average the weather data on the schedule established by the teacher?</li> <li>3) Is there a class Science blog posting for each of the 10 GT students for each week between the start of the project and March 24th?</li> <li>4) Did student post the questions and answers to the story questions on the science blog? Were their answers completely correct or mostly correct? If there answers were incorrect, after feedback from classmates, did students correct their answers?</li> <li>5) Did students tell you what weather and climate conditions on the Nile contributed to making the people sick?</li> <li>6) Did student tell you how weather and climate conditions in our area affect us? Were they right, mostly right? If answers were a little off to start with, did interaction with fellow students</li> </ol>
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	<p>result in a corrected response?</p> <p>7) Did student correctly tell you how weather and climate conditions have changed/or not since 2006?</p> <p>8) Did student utilize the results of the data collection process to correctly reach a conclusion about the change or lack of change in the weather and climate in both Luxor, Egypt and your home town? Did he/she use this information to justify a statement about whether or not the data supports the Global warming theory?</p> <p>9) Super achiever extension1...did the student pick a third location to analyze and evaluate? If they had a choice, would they choose to live in that location? Can they supply three reasons why they would like to live there?</p> <p>10)Super achiever extension 2: After being shown the conversion formula for converting Fahrenheit to Celsius the student added a Celsius column to their weather data table and converted the weekly and final averages to Celsius.</p>
Summative/End of Lesson Assessment:	<p>1) Student Weather data table exists</p> <p>2) Student Weather data table exists and is populated with all the weather data the students was required to collect since the onset of the project?</p> <p>3) The eBook and the class science blog document the students' answers to the questions embedded in the eBook story. RE: questions 4-8. a) the initial answers were correct; b) if initial answers were incorrect, they have been corrected through student collaboration;</p> <p>4) Super achiever extension 1 was correctly completed with proper grammar, sentence structure, and few or no spelling errors. Super achiever extension 2 was correctly completed with few or no errors.</p> <p>5) When presented with an unrelated set of weather and climate data on a summative test, or in a STAAR assessment scenario, the student can correctly record the data into a table analyzing and evaluating the information to determine the average temperature and precipitation amount over a given period.</p> <p>6) When presented with embedded information on a STAAR assessment scenario, the student can create a weather data table on the fly, analyze the information to determine average temperature and precipitation, and draw conclusions about the effects of the weather conditions on the people in the area being affected by the weather and climate conditions being studied.</p>

### Materials:

<b>King Tut's Revenge</b> eBook , powerpoint or online presentation and printouts incase internet is down.
Rain gauges, Handouts or online versions of rain guages ( tenths and quarter inches)
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Sample weather data tables, Instructions for creation on plain paper, local spread sheets,or online spread sheets
Wind Speed hand out or.... create windspeed animations for each wind state.